How Does the Law and Policy Encourage Towards a Low Carbon Energy Transition in the Scotland?

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Abstract: This article contains a doctrinal analysis of the law and policy encouragement towards a low carbon energy transition in the Scotland. To do this, the present article is primarily focused on electricity sector of the Scotland and its commitment towards a low carbon transition in this sector in coming years. This article analyzes the existing significant laws and policies in Scotland that encourage towards a low carbon transition. However, it also evaluates international obligation upon the Scotland and the UK, as well, towards this transition. Subsequently, it assesses the UK's legal framework in this regard. However, Scotland is firmly committed to achieve its targets towards a low carbon transition in the power sector although it needs more incentive and tight observation of the government to smoothen the process.

Keywords: Law and Policy, Scotland, UK, Energy, Electricity, Low Carbon

Introduction

Generally, low carbon energy denotes emission of substantially lower amount of carbon dioxide into the environment in producing different kinds of energy; like electricity, heat, motion etc. than the conventional fossil fuels. Conventional burning fossil fuels i.e. oil, gas, coal etc. emit high range of carbon dioxide which not only increase greenhouse gas concentration in the atmosphere, but also works as a main factor behind global warming and pollution to the environment. On the contrary, there is a concept called zero carbon, which refers to 100% replacement of fossil fuels by nonpolluting renewable energy in industrial sector[1].

Hence, if we do not want to make this earth a greenhouse gas chamber; undoubtedly, we need to heavily concentrate on low carbon sources instead of fossil fuels to produce energy. However, the trend of energy consumption is increasing every day, all over the globe. Hence, only substantial substitution of traditional fuels by low carbon sources is not enough to increase the total proportion of low carbon energy. Rather, an international standard is necessary to regulate the overall trends of consumption of energy.

However, traditional burning fossil fuels are very demanding around the globe mainly due to their low cost. On the contrary, wide use of low carbon energy are costlier and it needs transformation of technology as well. These are the main challenges behind transition from conventional fossils to low carbon energy. Additionally, there are issues relating to social, economic and environmental impacts associated with this transition.[2] Hence, it is not possible to substitute the fossil fuels by low carbon energy overnight; rather it requires a gradual process and firm commitment from the part of the policy makers. Nevertheless, speedy transformation into low carbon energy is ultimately necessary as the sources of fossil fuels are not unlimited and these sources are not environment friendly as well. Hence, to preserve the environment and to ensure energy security, it is essential to reduce the dependency on fossils as early as possible and within an agreed time frame.

Around the world there are two major sources of low carbon energy i.e. renewables and nuclear. Although low carbon energy sources are not cheap like conventional fossils and they require major investment and great incentive from the government initially. Nevertheless, once it is gone to production, it would become feasible gradually and sustainable for the planet as a whole.

UK is the pioneer in dealing with the climate change issues and the first country among the world which enacted the Climate Change Act in 2008 that imposes a burden to reduce greenhouse gas emission with the target of an 80% cut from 1990 levels by 2050.[3] Subsequently, in Scotland, Holyrood legislated the Climate Change (Scotland) Act, given royal assent in 2009, which imposes a legally binding framework upon the government of Scotland to fix an interim target of 42% greenhouse gas emission reduction by 2020 and an 80% reduction target by 2050[4]. Scotland has already emerged as global leader in mitigating climate change by reducing greenhouse gas emission to more than 45% since 1990. In 2017, the Committee on Climate Change (CCC) constituted the Climate Change Act and recommended a more ambitious emission reduction target to 90% by 2050, as the interim target has now been met[5]. However, according to Committee member Prof. Jim Skea, apart from considering the right balance between the ambition and the achievement, Scottish parliament should reflect the range of direct and indirect benefits arising out of carbon emission reduction[6].

The Scotland and the UK have some obligations under international law as well, to show their commitment towards a carbon free world. Although Westminster was struggling while processing the fourth carbon budget which extended into the 2020s, the first three carbon budget (up to 2022) recommended by the committee

were implemented swiftly[7]. Further, the UK government neglected the committee chairman's proposal to fix a limit for electricity emission to strengthen the signal provided by the carbon budgets but the then Energy Bill did not contain any provision regarding decarbonization target.

This essay will mainly discuss on the encouragement of Scottish law and policy to a low carbon electricity transition for several reasons. Firstly, electricity industry is at the heart of the response to the climate change mitigation commitment and electricity production is the major source of carbon dioxide emission. Secondly, technology and practice for low carbon electricity is well practiced and popular. Moreover, there are many alternatives in producing electricity through low carbon i.e. wind, solar, biomass, hydro, nuclear etc. although many of them are costly. Thirdly, electricity is highly[8] intertwined with other sources of carbon emission. Hence, it has multifold utilities if we can ensure low carbon transition in electricity sector. This article will also shed some light on UK's international obligation to encourage low carbon energy transition. Subsequently, this paper will focus on Scotland's law and policy which encourage a low carbon energy transition and finally it will consider the context of the UK in this regard.

International Obligation upon the UK to a Low Carbon Energy Transition

The Paris Agreement is not only the leading international instrument governing the climate change issues but also the first, truly global, effort to reduce emissions. The Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) concentrates on decarbonization, keeping in mind the social, economic and environmental impacts accompanied with decarbonization[9], as the preamble of this Agreement implies all the Parties to "respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity"[10].

The global leaders committed to keep global warming below 2°C and to pursue efforts to limit it to 1.5°C by this agreement. Although the carbon emission reduction under the mentioned agreement is not legally binding, the mechanism for periodically cranking the agreed pledges up is legally binding and the agreement finally set out a long-term goal to substitute fossils totally by adopting zero carbon policy in the second half of this century[11].

The UK has ratified this agreement on 17 November 2016 and become the 111th country among about 200 countries to ratify the Paris Climate Agreement to accelerate global action to cut carbon emission. Hence, the UK is documentarily committed to transform its energy sector gradually into a low carbon and zero carbon ultimately. Nevertheless, the UK will have to decarbonize the lion's share of its electricity by 2030 if it wants to show respect to its commitment[12].

However, the government's present stratagem to foster fracking and nuclear on the one hand and enhancement of six-fold tax on solar business on the other hand shows its reluctance to keep its commitment towards a carbon free world.

The Kyoto Protocol 1997 is another internationally significant instrument concerning climate change mitigation and reduction of carbon dioxide gas emission, as it is the only legally binding treaty which was drawn up in Kyoto, Japan in 1997 to be implemented by the UNFCCC. Most of the developed nations, except the US were committed to cut the emissions of key greenhouse gases that causes climate change under this protocol. The average target was a cut of around 5% relative to 1990 levels by 2012 as there was a target variation among the countries depending on their economic growth and contribution to the global warming[13].

Being a member state, the UK also has a target to reduce greenhouse gas emission under this protocol where the EU member states collectively made a commitment and being a part of that, the UK was committed to reduce it by 8 percent on 1990 levels by 2012. Subsequently, in the second phase of commitment, the UK was committed to reduce 20 % emission by 2020 compared with 1990 levels.

Nevertheless, the road to success for the Kyoto Protocol was not smooth due to disagreement among member states and consequently the Protocol became ineffective after the successful completion of first phase commitment in 2012. As it drew a distinction between the developed and developing countries in fixing the carbon emission target where emerging economics got preference and there were no binding emission target upon them, and after the end of the first commitment many of its influential members including Japan, Russia, New Zealand became reluctant to settle new target while the EU countries were the only party to gear up the protocol and set up a new target for them.

Scotland's Encouragement Towards a Low Carbon Electricity Transition

The Scottish parliament has legislated the Climate Change (Scotland) Act in 2009 after the enactment of UK's Climate Change Act in 2008 to accelerate the reduction of carbon emission target. According to its national and international commitments, by 2020 and finally by 2050 Scotland will become one of the clean energy generation country in the world. Accordingly,

the Scottish government has developed a target to decarbonize electricity by 2030.

Scotland has made mentionable progress towards its commitment to decarbonize energy sector. It is on track to achieve of 42% reduction of carbon dioxide emission by 2020 set out in the Climate Change (Scotland) Act. Nevertheless, transforming to a low carbon electricity production and consumption requires significant change in both the pattern of electricity production and consumption as well. The Committee on Climate Change recently recommends further reduction of 61% by 2030 to fulfil the requirement of the said Act, which would go beyond the UK's target during this period. Particularly, the Climate Change (Scotland) Act imposes burden to decrease emissions by at least 3% per year starting in 2020[14]. The committee's suggestion is based on thorough review of evidences including open call for evidence, discussion with major stake holders, public hearings and own analysis.

The Climate Change (Scotland) Act has specific gradual targets for decarbonization, like 80% of Scottish electricity demand will come from renewable sources by 2020. Nevertheless, meeting these annual targets determined by the Act will not be obtained automatically, rather it calls for a series of actions both from the governmental agencies and community.

It was vastly accepted that the target of 42% reduction of emission by Scotland by 2020 urged the EU to show the same level of ambition by raising their target to 30%, when the Climate Change (Scotland) Bill was drafted in 2008. This opinion was also supported by the Committee on Climate Change because they believed the 42% reduction target is feasible under those situations[15].

Renewable energy is playing crucial role in Scotland's transition to low carbon transition, which is safe, secure and cost-effective means of electricity generation than new nuclear power plants; and reducing dependence on carbon-intensive fuels. The Scottish Government has already recognized this and subsequently prepared a Low Carbon Behaviours Framework which sketches their future plans to support the transition to low carbon living and the main behaviours they are looking to influence i.e. housing, transport, food and consumption[16]. Apart from constituting the Climate Change Fund, the Scottish Government has also taken their evidence based approach to local community behavioural change action, such as domestic energy efficiency and action to be taken towards a low carbon transition in the mentioned Behavioural Framework[17].

Fortunately, Scotland has high prospect of producing clean energy with tidal and offshore wind potential. This is also ensured in the Scottish government's target to deliver 100% of gross electricity consumption from renewable sources by 2020. However, that does not mean that Scotland will be fully dependent on renewables rather it will be a combination of both renewable and thermal.

The Government of Scotland is planning to reduce the conventional carbon sources dependency on electricity production by over 80% by 2030, down from 289 gCO2/kWh in 2011 to 50 gCO2/kWh in 2030[18]. They also planned how they would achieve the target; initially by massive installation of renewable energy technologies and a transition towards cleaner thermal generation using CCS technology.

The Electricity Generation Policy Statement (EGPS)[19] 2013, scrutinizes the means by which it generates electricity and recommends the alterations essential to meet the Government's targets. The EGPS is structured around[20]:

- Energy demand reduction
- Renewable energy sources
- Carbon Capture and Storage (CCS)
- Nuclear
- Bio-energy (heat or CHP only)
- Electricity storage
- Transmission and distribution

However, to do these properly, Scotland also needs to maintain the supply security. Hence, building a minimum of 2.5 GW of new or replacement efficient fossil fuel electricity generation increasingly fitted with Carbon Capture and Storage is necessary before the closure of existing coal and gas plants. Electricity transmission and distribution networks also need to be upgraded to utilize Scotland's full energy potential and boost security of supply in the period to 2030. In addition, developments in grid infrastructure and improved storage capacity will ultimately assist to enable low carbon dioxide emissions within the electricity supply sector[21].

Encouragements of the UK to Low Carbon Transition

The UK had officially started thinking about climate change and an environment friendly world by signing the UN Framework Convention on Climate Change (UNFCC) in 1992. Subsequently, it became a part of Kyoto Protocol in 1997 and legally committed to reduce carbon emission by 13% based on 1990 levels by 2012. However, the first Climate Change Programme was published in 2000 and projected an emission reduction of 19% by a decade. Consequently, the Department of Trade and Industry published 'Our Energy Challenge: Creating a Low Carbon Economy' in 2003 during the Tony Blair government's tenure where the then Prime Minister urged for global action to preserve environment and promised to keep the UK on track for emission reduction of 60% by 2050, which indicated for the first time that the government is

focusing on climate change in its energy policy. However, the successive governments were not successful to keep the UK on track due to lack of commitment.

The enactment of the Climate Change (CC) Act in 2008 and subsequently the Energy Act in 2013 reimburse UK's position and made it a global leader in this regard. The reason for legislating the Climate Change Act was to give a legal effect on UK's ambition in carbon reduction and to set up a reasonable percentage of reduction for the future. Hence, it was also mandatory to form a body which would scientifically recommend the percentage that would ultimately push to create the Climate Change Committee (CCC). The Climate Change Act 2008 has the following key features[22]:

Carbon targets: The Act has obliged the government to decrease greenhouse gas emissions by 80% below 1990 levels by 2050, while there is an interim target to diminish carbon dioxide emissions by 26% by 2020.

The Committee on Climate Change: The Committee on Climate Change (an independent expert body) has constituted under the mentioned Act to guide the government to fix the appropriate level for the targets, budgets, and on matters relating to mitigation and adaptation. Moreover, the Committee will submit annual reports to parliament on progress towards the targets and the government must respond to this report.

Trading schemes: The Act has empowered the government to legislate necessary secondary legislation to propose different emissions trading schemes.

Impact of climate change: The government must publish regular reports on the vulnerabilities arising out of climate change towards the UK and actions for adaptation to respond to prevent those risk(s).

The Climate Change Act of UK is noteworthy both in its ambition and in its sharp contrast to the failure of the preceding Climate Change Review. The Friends of the Earth mentioned that the Climate Change Act marked a watershed[23]: "it moved climate change from political fashion to the permanent agenda", and officials agreed that it changed the climate change question from "whether" to "how"[24].

Apart from the CC Act, theEnergy Act 2013 of the UK establishes a legislative framework for delivering secure, affordable and low carbon energy and also includes provisions on decarbonization. Moreover, it enables the government to determine a decarbonization target for electricity sector by 2030 through secondary legislation.

Furthermore, this Act also takes measures to attract the £110 billion investment, which is urgent to replace present generating capacity and upgrade the grid by 2020, and to cope with a rising demand for electricity[25].

This includes provisions for:

- "long-term contracts to provide stable and predictable incentives for companies to invest in low-carbon energy generation;
- ensure the security of electricity supply;
- Access to markets including Power Purchase Agreements (PPAs), to ensure the availability of long-term contracts for independent renewable generators, and liquidity measures to enable the Government to take action to improve the liquidity of the electricity market, should it prove necessary;
- transition arrangements for investments under the Renewables Obligation scheme; and
- limit carbon dioxide emissions from new fossil fuel power stations"[26].

The European Union (EU) has also declared a long-term target for 2050 of reducing Europe's GHG emissions by 80% to 95% compared to 1990 levels. Now the EU is on a cost-effective track to meet this target. Additionally, the European Council adopted a new set of climate and energy targets for 2030 in 2014. This includes a binding target of reducing emissions by at least 40% compared to 1990 levels, a target, binding at EU level, of achieving a share of at least 27% for renewable energy consumption and an indicative target at EU level of at least 27% for improving energy efficiency, compared to projections of future energy consumption[27].

Conclusion

Moving to a low carbon economy instead of using cost effective traditional fossil fuels is not easy. Decarbonization requires comprehensive efforts from the government. It will not be achieved by merely putting some value on carbon, rather the policy makers have to address the complex web of market, investment and behavioural patterns of the consumers. This can be achieved by a mixture of well-coordinated policies and by addressing the issue of energy efficiency. In addition, putting intensive focus on green electricity production is necessary, because electricity is at the heart of everything and many other low carbon transition, like heating, transport are highly dependent on electricity.

Completely changing the behavioural trends is another challenge for the government. Although it is complementary, it plays an important role towards decarbonization. Hence, the government must work to divert present behavioural pattern to new innovation e.g. electric cars[28]. Proposing fixed terms for the regulation of all private sector housing in relation to energy performance, establishing dates for implementation and setting out what carbon reduction is expected to be delivered, from each element of the Scotland's

Energy Efficiency Programme (SEEP) is also essential. Nevertheless, subsidy in renewable is another crucial matter to be successful in decarbonizing Scotland.

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